

BattleActs Practice Exam  
 2018.Fall  
 6-Canada  
 slay the beast

#	total pts: 70	a	b	c	d	e
1	2.00	1.00	0.50	0.50		
2	1.00	0.25	0.50	0.25		
3	1.75	0.75	0.50	0.50		
4	2.00	0.50	0.50	1.00		
5	2.25	0.75	0.75	0.75		
6	1.75	0.25	0.75	0.25	0.50	
7	2.50	0.75	0.50	0.50	0.75	
8	3.25	0.75	0.50	1.00	1.00	
9	1.50	0.50	0.75	0.25		
10	1.00	0.50	0.50			
11	3.75	0.75	0.50	1.00	1.50	
12	2.25	0.75	1.00	0.50		
13	7.00	2.00	4.50	0.50		
14	1.25	1.25				
15	2.75	0.75	1.00	1.00		
16	2.25	2.25				
17	2.25	1.00	0.50	0.75		
18	3.00	0.75	0.75	0.75	0.75	
19	3.50	1.00	0.50	1.00	1.00	
20	3.50	1.50	0.75	1.25		
21	1.75	0.75	0.50	0.50		
22	2.00	0.75	0.50	0.75		
23	3.00	0.50	0.50	1.25	0.75	
24	2.00	1.50	0.50			
25	4.00	1.50	0.50	2.00		
26	2.25	0.50	1.00	0.75		
27	1.75	0.25	1.50			
28	2.75	1.00	1.00	0.75		

**Question:** 1

**Points:** 2.00 points

a. (1 point)

Identify 4 examples of federal legislation designed to guarantee the solvency of insurers.

b. (0.5 points)

Define the principle of 'indemnity'.

c. (0.5 points)

Is a life insurance policy an 'indemnity' policy? Explain.

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**Question:** 2

**Points:** 1.00 points

a. (0.25 points)

Describe the 'prior approval' rate regulatory approach.

b. (0.5 points)

Describe the 'use & file' rate regulatory approach.

c. (0.25 points)

Identify the rate regulatory approach used in Nunavut & Yukon.

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**Question:** 3

**Points:** 1.75 points

a. (0.75 points)

Identify 3 uses of credit scores by insurers.

b. (0.5 points)

Provide 1 argument in favour of using credit scores and 1 argument against.

c. (0.5 points)

Identify a concern a regulator may have about an insurer's use of credit scores in an economic downturn, and identify a response an actuary might provide that addresses the concern.

**Question:** 4

**Points:** 2.00 points

a. (0.5 points)

Identify the 2 components of auto insurance benefits in Ontario.

b. (0.5 points)

According to the Marshall reading, "Fair Benefits Fairly Delivered", the benefits in Ontario auto insurance are not delivered fairly. Briefly describe 1 reason for this.

c. (1 point)

Ontario has a 5-point Action Plan to address the unfair delivery of benefits in Ontario. Briefly describe 2 points in this plan.

**Question:** 5

**Points:** 2.25 points

In each of the following scenarios, explain a likely outcome for the insurance company and cite any relevant precedents used to support the conclusion drawn.

a. (0.75 points)

The insured, a farmer, suffers a lightning strike to his property causing a tree to fall onto a storage shed containing barrels of undiluted pesticides. The barrels are damaged and pesticide spills onto a neighbouring property, although the neighbour's property was not directly damaged by the fire. Assuming the farmer's insurance policy covers fire, lightning, windstorm, etc..., does his insurer have a duty to defend his neighbour's claim of contamination from the pesticides?

b. (0.75 points)

A male limousine driver in Victoria, BC, is accused of sexually abusing a female passenger during a birthday party. The driver mistakenly believed consent had been given and wants the limousine company's insurer to defend him against the passenger's claim of abuse. Is the insurer obligated to defend him?

c. (0.75 points)

A banker was accused of fraud in a money-laundering scheme, and wants her professional liability insurer to defend her in court. Is her insurer obligated to defend her?

**Question:** 6

**Points:** 1.75 points

a. (0.25 points)

Define 'joint and several liability'.

b. (0.75 points)

Describe a proposed tort reform for joint and several liability

c. (0.25 points)

Define the 'collateral source rule'.

d. (0.5 points)

Briefly describe a proposed tort reform for the collateral source rule, and state 1 advantage for the reform.

Question: 7

Points: 2.50 points

An agricultural producer insures the production of corn under a plan with the following details:

area of crop:	40 hectares
probable yield:	14,000 kg/ha
coverage level:	75%
insured price:	\$0.24/kg

a. (0.75 points)

Growing Forward 2 is a comprehensive federal-provincial-territorial framework for Canada's agricultural sector. It consists of 6 Business Risk Management Programmes. Briefly describe 3 Business Risk Management Programmes that could protect this producer against crop losses or a drop in the price of the crop.

b. (0.5 points)

If the actual production of corn in a particular year is 350,000 kg, calculate the indemnity paid to the producer.

c. (0.5 points)

To calculate probable yield for insurance purposes, we normally use an average of historical yields. Sometimes, however, historical yields need to be adjusted.

- i What is the general purpose of such a historical adjustment?
- ii Identify a specific reason for a historical adjustment.

d. (0.75 points)

It is important for agricultural insurance to be self-sustainable.

- i Define the term 'self-sustainability load'.
- ii What is the statistical definition of 'self-sustainability'?



Question: 8

Points: 3.25 points

a. (0.75 points)

Briefly describe the origin, role, and goal of Facility Association.

b. (0.5 points)

Briefly describe 2 functions of the Facility Association Board of Directors.

c. (1 point)

Compare and contrast FARM and RSPs with respect to:

- i rates
- ii customer knowledge

d. (1 point)

Given the following information, calculate the company's loss ratio on their share of the pool. Assume a provincial expense allowance (PEA) of 25%.

	company	province
direct earned <b>exposures not</b> ceded to the RSP	1,000	20,000
direct earned <b>premium</b> ceded to the RSP	48,000	600,000
total incurred <b>losses</b> ceded to the RSP	n/a	950,000

**Question:** 9

**Points:** 1.50 points

a. (0.5 points)

How are Canadian employment insurance benefits funded?

b. (0.75 points)

Describe the tax treatment of employment insurance premiums for:

- i employer
- ii employee
- iii self-employed individual

c. (0.25 points)

Describe the tax treatment of employment insurance benefits.

**Question:** 10

**Points:** 1.00 points

a. (0.5 points)

The Insurance Corporation of British Columbia has recently become concerned about availability and affordability of auto insurance. Identify 2 issues of concern. (*You do **not** have to state the corresponding target outcome.*)

b. (0.5 points)

According to "ICBC Affordable and effective auto insurance – A new road forward for British Columbia", identify 2 guiding principles of an effective auto insurance system.

Question: 11

Points: 3.75 points

a. (0.75 points)

Identify 3 reasons that coverage for overland flooding has generally not been offered to residential customers in Canada.

b. (0.5 points)

Identify 2 areas of government under-investment in risk planning and mitigation.

c. (1 point)

Identify 4 preconditions for good flood risk management.

d. (1.5 points)

Suppose you're given the following information regarding flood risks and potential risk mitigation strategies:

Let

t = time horizon in years

f = frequency of flood

s = severity of flood

C1 = cost of infrastructure (millions)

C2 = cost to society (millions)

(Assume premium charged = expected losses)

# properties	60,000
property value	\$ 200,000
flood damage as a % of property value	10%

risk management option	cost	flood return period
1) no infrastructure investment	\$ -	50
2) build a floodway	\$ 125,000,000	250

In the following table:

$$C2 = [(\#homes) \times (s) \times (f)]/1,000,000 + C1$$

option	t	# homes	s	f	C1	C2
1	1	60,000	\$ 20,000	2.0%	\$ -	\$ 24.0
1	10	60,000	\$ 20,000	20.0%	\$ -	\$ 240.0
2	1	60,000	\$ 20,000	A	\$ 125.0	C
2	10	60,000	\$ 20,000	B	\$ 125.0	D

Calculate:

i A,B,C,D

ii the value of t where option 1 starts being more expensive to society than option 2

Question: 12

Points: 2.25 points

A Canadian P&C company holds the following 3 bonds. Assume the company is an income tax exempt corporation and that it has no other investments. (*Amounts in 000s.*)

AV = Amortized Value

\* Values given are year-end values

MV = Market Value / Fair Value

Transit Bond	Class	AV 2016	MV 2016	Coupon in 2017	AV 2017	MV 2017
STM	HTM	3,000	3,500	40	2,900	3,400
TTC	AFS	4,000	3,900	75	4,200	4,000
GRT	HFT	1,050	1,100	25	1,075	1,150

a. (0.75 points)

Determine the value of each bond to be shown in the 2017 year-end financial statements.

b. (1 point)

Calculate the impact of holding these investments on net income and other comprehensive income in 2017.

c. (0.5 points)

Assume the market rate increases on Jan 1, 2018. What effect does an AFS bond have on net income, other comprehensive income, and equity?

Question: 13  
 Points: 7.00 points

a. (2 points)

Given the following information, calculate the MCT capital available.

qualifying category A common shares	24,000
contributed surplus	3,000
Retained Earnings	5,500
reserves	5,000
AOCI	6,500
qualifying category B instruments	16,500
qualifying category C instruments	6,500
non-controlling interests	600

You'll also need some information on reinsurance ceded to unregistered reinsurers:

- UEP ceded: (\$) UnEarned Premiums ceded to assuming reinsurer
- O/S Recov: (\$) OutStanding losses Recoverable from assuming reinsurer
- Reins Recv: (\$) Reinsurance Receivable
- Reins Pay: (\$) Reinsurance Payable
- NOD: (\$) Non-Owned Deposits (RSA + Other) & includes FUNDS to secure pmt from assuming insurer (the FUNDS inclusion is new for 2018)
- LOC: (\$) Letters Of Credit

UEP ceded	O/S Recov	Reins Recv	Reins Pay	NOD	LOC
18,000	8,000	3,000	6,000	8,000	5,000

b. (4.5 points)

Given the following information, calculate the MCT minimum capital required.

Line of Business	net unpaid *	margin
Line 1	45,000	16%
Line 2	77,000	11%

*\* net unpaid is discounted but excludes PfADs*

Line of Business	prem liabs	margin	DWP (12 mths)	AWP (12 mths)	CWP (12 mths)
Line 1	20,000	19%	80,000	20,000	9,000
Line 2	58,000	15%	121,000	23,000	29,000

*Question continues on next page...*

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**Question:** 13 (*continued*)

These 2 amounts relate to components of insurance risk:

capital required for unregistered reinsurers:	3,900
capital required for catastrophes:	3,000

The capital required for <u>interest rate</u> risk is:	3,500
The capital required for <u>foreign exchange</u> risk is:	500
The capital required for <u>equity</u> risk is:	4,000
The capital required for <u>real estate</u> risk is:	1,000
The capital required for <u>credit</u> risk is:	4,530

Here is some more information that you'll need:

AWP(ig): (\$) AWP (last 12 mths) from intra-group pooling

CWP(ig): (\$) CWP (last 12 mths) from intra-group pooling

DWP	AWP	CWP	growth	AWP(ig):	CWP(ig):
201,000	43,000	38,000	21%	0	0

	risk factor
DWP over last 12 months	2.50%
AWP over last 12 months	1.75%
CWP over last 12 months	2.50%
AWP(ig) over last 12 months	0.75%
CWP(ig) over last 12 months	0.75%
premium growth above 20%	2.50%
capital factor *	8.50%

*\* capital factor applies to total capital required BEFORE operational risk margin and diversification credit.*

c. (0.5 point)

Calculate the MCT ratio and state whether it is above or below the supervisory target.

Question: 14

Points: 1.25 points

a. (1.25 points)

Calculate the excess (deficiency) ratio for AY 2016 and **state** whether it's an excess or a deficiency.

Incremental Paid Loss for Calendar Year			
AY	2016	2017	2018
2016	102,000	28,600	7,700
2017		81,000	21,100
2018			103,000

Discounted UCAE at end of Cal. Yr.			
AY	2016	2017	2018
2016	129,000	100,600	91,500
2017		128,000	81,900
2018			149,000

Investment Yield for 2017: 3.10%  
Investment Yield for 2018: 2.80%



Question: 15

Points: 2.75 points

Suppose you're given the following information

balance sheet item	current year	prior year
GWP	135,000	133,770
U/W Income	4,050	4,700
Income from Subs	150	175
Realized Gains	600	600
Total Investment Income	4,900	6,000
NI (Net Income) preTax	9,100	10,875
Total Tax	5,600	5,800
Total Assets	140,000	142,000
Equity	47,000	50,000

a. (0.75 points)

Calculate ROE, ROR, ROA (*Return on Equity, Return on Revenue, Return on Assets*).

b. (1 point)

Using part (a), and given that the MCT ratio for this company is 155%, comment on the financial health of the company.

c. (1 point)

The auditor discovered an error in the above table regarding the equity for the current year.

- i Assuming the other values in the table are correct, recalculate the current year's equity. (*Assume no dividends were paid to shareholders, and no equity investments or contributions were made to the company.*)
- ii Recalculate ROE using the revised equity. Does this change your evaluation of the company's financial health?

Question: 16

Points: 2.25 points

a. (2.25 points)

Given the following information, calculate the TOTAL NET COMMISSIONS. Note that I've used abbreviations in the table so the table would fit in the width of the page.

**DFcomm:** Deferred Commissions

**@ start:** at start of year

**UEcomm:** Unearned Commissions

**@ end:** at end of year

LOB	(02)	(03)	commissions in respect of WP				(08)	(09)	(10)
	DFcomm @ start	UEcomm @ start	Direct	Assm'd	Ceded	Net	DFcomm @ end	UEcomm @ end	Net Comm
1	1,400		1,000	100	400		1,600		
2	1,600		1,500		400	1,200	1,900		
Tot	3,000		2,500		800		3,500		

gross contingent commissions	600
ceded contingent commissions	150
gross other non-deferrable commissions	300
ceded other non-deferrable commissions	50
ceded commission income (LOB1 + LOB2)	1,200

Question: 17

Points: 2.25 points

a. (1 point)

Calculate the earthquake reserve component using the model method with phase-in. (*EPR is the earthquake premium reserve.*)

Year	2018
deductible	20,000

EastCan.PML.500	40,000
WestCan.PML.500	160,000

EastCan.PML.420	25,000
WestCan.PML.420	125,000

EPR	29,600
Financial Resources	55,000

EastCan. <b>PTIV</b>	46,800
WestCan. <b>PTIV</b>	196,800

b. (0.5 points)

Identify and briefly describe 2 principles of earthquake risk management.

c. (0.75 points)

Identify and briefly describe 3 sound earthquake modeling practices.

Question: 18

Points: 3.00 points

For each of the following scenarios, evaluate whether risk transfer has occurred and briefly explain your answer. Your explanation may be either qualitative or quantitative as appropriate.

a. (0.75 points)

An individual purchases an annual auto insurance policy for \$2,000 with no deductible and a limit of \$500,000. There is a 20% probability of loss within the year and an expected severity of \$25,000.

b. (0.75 points)

A risk manager purchases an annual 100% quota-share policy for \$750,000. The portfolio contains 800 policies. The individual loss distribution is given in the table below:

<u>probability of loss</u>	<u>severity of loss</u>
95%	0
5%	12,000

c. (0.75 points)

A risk manager purchases an aggregate excess-of-loss policy with the following terms:

coverage:	20m excess of 10m
aggregate limit:	20m
aggregate deductible:	2m
premium:	3m

The loss distribution for the portfolio is as follows:

<u>probability of loss</u>	<u>severity of loss</u>
80%	0
10%	5m
10%	15m

d. (0.75 points)

A risk manager purchases a policy with the following terms:

premium:	1,000	
probability of loss:	6%	
expected severity:	150	(net of premium)

Question: 19

Points: 3.50 points

a. (1 point)

Given the following information about Company A and Company B, explain whether the appointed actuary can conclude whether each company is in good financial condition.

Company A	Metric	2019	2020	2021
Base Scenario	MCT Ratio	150%	175%	200%
	Capital (000s)	10,000	15,000	20,000
Adverse Scenario	MCT Ratio	120%	155%	160%
	Capital (000s)	-5,000	10,000	15,000

Company B	Metric	2019	2020	2021
Base Scenario	MCT Ratio	200%	175%	150%
	Capital (000s)	2,000	1,000	300
Adverse Scenario	MCT Ratio	130%	120%	90%
	Capital (000s)	500	200	0

b. (0.5 points)

If you were given the choice of investing in either Company A or Company B, based only on the information given above, what would you do? Briefly explain your answer.

c. (1 point)

Suppose the adverse scenario in Company A is an increase in frequency and severity of losses due to a hurricane. Identify 2 possible ripple effects and 2 possible management actions.

d. (1 point)

Define the following terms:

- i plausible adverse scenario
- ii reverse stress testing

Question: 20

Points: 3.50 points

a. (1.5 points)

Calculate the APV (*Actuarial Present Value*) of the unpaid loss.

net unpaid at 12 months	61,000
ceded unpaid at 12 months	2,000
discount rate	7.5%

MfAD(inv)	75 bps
MfAD(claims)	10.0%
MfAD(re)	12.0%

Age	Cumulative Paid Loss %
12	40%
24	80%
36	100%

b. (0.75 points)

Identify the standard ranges for margins for adverse development for:

- i claims development
- ii reinsurance ceded
- iii investment return rate

c. (1.25 points)

Can you rank the following reserve analysis situations from 'lowest to highest' in terms of the claims development '% risk margin' each would require on their point estimates?

- A 1 severe hurricane event (1 month old)
- B 5,000 auto liability claims (AY 17 at 12/31/17), company has good operations
- C 2,500 auto liability claims (AY 17 at 12/31/17), company has good operations
- D 5,000 auto physical damage claims (AY 17 at 12/31/17), company has good opns
- E 1,000 auto physical damage claims (20 year-old accident year), all claims settled

**Question:** 21

**Points:** 1.75 points

a. (0.75 points)

Identify and briefly describe 3 categories of risk considered in A.M. Best BCAR.

b. (0.5 points)

Briefly describe 1 difference between the Canadian and American BCAR calculation.

c. (0.5 points)

Identify a conceptual difference between MCT and BCAR regarding the time horizon.

**Question:** 22

**Points:** 2.00 points

a. (0.75 points)

Identify 3 considerations in determining concentration risk of an insurer.

b. (0.5 points)

Briefly describe the 2 approaches which account for the time value of money when evaluating the runoff of claims liabilities.

c. (0.75 points)

Identify 3 considerations in determining the interest rate used to discount policy liabilities.



**Question:** 23

**Points:** 3.00 points

a. (0.5 points)

Rating agencies are supposed to provide reliable financial strength ratings to insurers. Examples of well known rating agencies are A.M. Best, Moody's, and Standard & Poor's. Identify 2 shortcomings of rating agencies.

b. (0.5 points)

Rating agencies often use a rating method called 'interactive rating'. Define this term.

c. (1.25 points)

Identify the 5 steps in the interactive rating methodology.

d. (0.75 points)

Interactive ratings can be intrusive, time-consuming, and expensive. Identify 3 reasons that insurers participate in them anyway.

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**Question:** 24

**Points:** 2.00 points

a. (1.5 points)

Describe 3 key elements of ORSA.

b. (0.5 points)

Comment on the following statement:

*All federally regulated companies must implement the same ORSA process.*

**Question:** 25

**Points:** 4.00 points

a. (1.5 points)

According to the CIA paper on modeling, define the following terms:

- i model
- ii model elements
- iii model risk

b. (0.5 points)

Model risk is measured across 2 dimensions. Identify these dimensions.

c. (2 points)

Given the following information, use the 2-dimensional model risk rating system to evaluate the overall model risk.

**task:** forecast capital requirements

**method:** used an established Excel model of moderate complexity with only minor updates

**model risk considerations:**

- capital requirements are significant
- model is used frequently
- there is excellent documentation for the model
- the 2 best actuarial analysts in the company are running the model

**Question:** 26

**Points:** 2.25 points

a. (0.5 points)

State the definition of materiality.

b. (1 point)

Based on company characteristics, which company would you expect to have a more rigorous materiality level in each of these scenarios (*more rigorous means lower.*) Briefly explain.

Scenario 1:

Company A has a surplus of 100 million

Company B has a surplus of 20 million

Scenario 2:

Company C started operation in 1920

Company D started operation in 2010

c. (0.75 points)

Identify considerations regarding the disclosure of materiality in actuarial communications.

**Question:** 27

**Points:** 1.75 points

a. (0.25 points)

Define the term 'subsequent event'.

b. (1.5 points)

The Appointed Actuary of a property and casualty insurance company is valuing policy liabilities as at December 31, 2017. The report date is February 22, 2018. For each of the following scenarios, briefly discuss the actions that the Appointed Actuary should take.

- i A severe winter storm occurred on Jan 15, 2017.
- ii On Feb 1, the IT department notified the actuary regarding a significant volume of claims missing from the 2017 claims database.
- iii In this part, suppose the company is a reinsurer. A case reserve increase by the ceding insurer was not reported to the appointed actuary at the reinsurer until Feb 5.

a. (1 point)

Briefly describe 4 qualifications that OSFI expects an appointed actuary to possess.

b. (1 point)

Briefly describe 4 roles or duties of the Appointed Actuary (AA).

c. (0.75 points)

Identify 3 objectives of a peer reviewer.

Answer: 1

Points: 2.00 points

Source: Baer.Intro

(1 point) a. This is a standard question that has been asked many times. [Hint: **CIRCA-F**]. Any 4 of:

**CREATION:** oversee creation of (domestic) & licensing (foreign) of insurers

**INVESTMENTS:** restrictions on types of investments that are permitted (to reduce risk)

**RATING:** authorization of rating bureaus for info-sharing

**COMPLIANCE:** give Govt depts authority to enforce compliance with legislation

**ADEQUACY:** create boards to oversee and ensure adequacy of rates

**FILE F/S:** require regular filing of Financial Statements

(0.5 points) b. - after covered loss, return insured to former financial position (before loss), and neither penalize nor reward

*(This is **different** from a contract of indemnity, which is: a contract where the amount recoverable is measured by the insured's pecuniary loss.)*

(0.5 points) c. - no, because a loss of life cannot be indemnified

- life insurance is a contract that pays a certain sum upon death (irrespective of pecuniary loss)

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**Answer:** 2

**Points:** 1.00 points

**Source:** KPMG.RegOv

- (0.25 points) a. **prior approval:**  
- insurer approves (Rates, Rate Changes, Risk Classification) before use
- (0.5 points) b. **use & file**  
- insurer uses (Rates, Rate Changes, Risk Classification) then files with regulators  
- regulators can retroactively change rates within a certain period
- (0.25 points) c. open competition



**Answer:** 3

**Points:** 1.75 points

**Source:** AAA.CrdSc

- (0.75 points) a. - as an U/W criterion  
- as a rating variable  
- for assignment to tiers (and/or RSPs or FARM)
- (0.5 points) b. for (1 of these):  
- credit scores are statistically significant  
- credit scores won't change aggregate premium  
against (1 of these):  
- credit scores are unfairly discriminatory (poor families, recent immigrants)  
- credit scores may violate privacy
- (0.5 points) c. potential concern (1 of these):  
- unwarranted increase in aggregate premium  
- distributional shift in individual premiums that doesn't reflect true cost differences  
actuary's response (1 of these):  
- apply an off-balance factor to leave aggregate premium unchanged  
- stop using credit scores OR redo classification analysis once data has stabilized

Answer: 4

Points: 2.00 points

Source: Marshall.Benefits

(0.5 points) a. - no-fault or accident benefits  
- tort or bodily injury

(0.5 points) b. Any 1 of: [Hint: **CLEV**]  
**C**ost control at the expense of care  
- insurers emphasize control at the expense of care, but victims don't recover so final cost is higher not lower  
**L**awyers  
- lawyers' contingency fees are a percent of the settlement, so lawyers seek higher settlements not better care for victims  
**E**ntitlements  
- victims seek to maximize entitlements versus addressing own care needs  
**V**olume  
- providers are paid on volume of treatment, not results

(1.0 point) c. Any 2 of:  
**structural flaws**  
- fix structural flaws by appointing an arms-length regulator with powers to enact policies & procedures  
**catastrophic injuries**  
- change compensation system for catastrophic injuries because lawyers are taking too big a chunk  
**care not cash**  
- focus on timely, appropriate medical care, not cash payouts  
**lawyers**  
- make contingency fees transparent  
**smart regulation**  
- allow insurers more regulatory freedom to compete on price & service

**Answer:** 5

**Points:** 2.25 points

**Source:** Land.Cases

- (0.75 points) a. likely outcome: - insurer has no duty to defend  
precedent: - Precision Plating v Axa Pacific Insurance  
explanation: - the neighbour's claims were for contamination, not fire, and therefore not covered by the farmer's policy
- (0.75 points) b. likely outcome: - insurer has no duty to defend  
precedent: - Sansalone v Wawanesa  
explanation: - the driver's actions were intentional and injury was natural and probable so there was INTENT to cause injury  
- intentional injury is excluded by the policy
- (0.75 points) c. likely outcome: - insurer has no duty to defend  
precedent: - Nichols v American Home Assurance  
explanation: - since indemnification for fraud isn't covered by a professional liability policy, there is no duty to defend  
- duty to defend is TRIGGERED by duty to indemnify, and there is no duty to indemnify

**Exam:** BattleActs 6C Practice Exam 1 (2018.Fall) - [ANSWER SHEET]

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**Answer:** 6

**Points:** 1.75 points

**Source:** Harris.Tort

(0.25 points) a. plaintiff may recover any or all damages from any or all the defendants

(0.75 points) b. Hint: **ERF**  
**E**liminate joint and several liability  
**R**eplace with proportionate liability  
create a **F**und for guilty parties who can't pay

(0.25 points) c. evidence of plaintiff's collateral source need not be entered at trial

(0.5 points) d. - eliminate the rule so that collateral sources can be taken into account when determining award  
- advantage is that elimination reduces the likelihood of over-compensation

Answer: 7

Points: 2.50 points

Source: Chev.Agric

- (0.75 points) a. agricultural insurance: - protects against production loss  
agricultural stability: - protects against margin decline  
agricultural recovery: - protects against disaster

- (0.5 points) b. A = Area PG = Production Guarantee  
P = Probable Yield AP = Actual Production  
C = Coverage Level

PG	Indemnity
= A x P x C	= max(0, PG - AP) x (insured price)
= 40 x 14,000 x 75%	= max(0, 420000 - 350000) x 0.24
= 420,000	<b>= 16,800</b>

- (0.5 points) c. i to reflect current production capability  
ii Any 1 of:  
- change in farming or management practices  
- change in insurance programme design  
- change in data source or data collection technique  
- maturity of perennials (yield would vary of their life cycle)  
- quality variation of crop from year-to-year (possibly due to insured perils)

- (0.75 points) d. i a load in rates to recover deficits and maintain surplus  
ii FOR ALL base & adverse scenarios with:  
*initial deficit = 6th yr, 95th percentile*  
MUST RECOVER DEFICIT:  
- *in 15 years on average*  
- *in 25 years with 80% probability*

Answer: 8

Points: 3.25 points

Source: FA.Dutil

(0.75 points) a. origin: - created by the insurance industry as an unincorporated non-profit of all auto insurers  
role: - administers residual market mechanisms: FARM, RSPs, UAF  
goal: - **ensure** (auto insurance availability) **for** (all owners & licensed drivers)  
**unable** (to obtain coverage through the voluntary market)

(0.5 points) b. Any 2 of:  
rate changes: - approve rate changes and filings  
expenses: - authorize expenses  
standards: - establish standards for servicing carriers and RSP users  
committees: - appoint committees and subcommittees

(1 point) c. rates:  
FARM: - uses rates set by FA  
RSPs: - uses rates of ceding company  
  
customer knowledge:  
FARM: - yes, customer knows they've been placed with FA  
RSPs: - customer does NOT know they've been ceded to a RSP

(1 point) d. First calculate the participation ratio PR:  
 $= (\text{company ceded exposures}) / (\text{province ceded exposures})$   
 $= 1,000 / 20,000$   
 $= 5\%$

Now, the company's share of the losses is  
 $= (\text{province ceded losses}) \times \text{PR}$   
 $= 950,000 \times 5\%$   
 $= 47,500$

And the company's share of the premium is  
 $= (\text{province ceded premiums}) \times \text{PR} + (\text{company ceded premium}) \times \text{PEA}$   
 $= 600,000 \times 5\% + 48,000 \times 25\%$   
 $= 42,000$

Putting it all together, the loss ratio is  
 $= (\text{company's share of losses}) / (\text{company's share of premium})$   
 $= 47,500 / 42,000$   
 $= 113.1\%$

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**Answer:** 9

**Points:** 1.50 points

**Source:** Morn.Pension

(0.5 points) a. employer and employee share the cost 50/50

(0.75 points) b. **premiums:**  
- tax deductible for employer  
- employee receives a tax credit  
- 50% of premium is tax deductible for a self-employed individual

(0.25 points) c. **benefits:**  
- taxable

**Exam:** BattleActs 6C Practice Exam 1 (2018.Fall) - [ANSWER SHEET]

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**Answer:** 10

**Points:** 1.00 points

**Source:** ICBC.Affordable

- (0.5 points) a. Any 2 of:
- increasing frequency of accidents
  - claims-per-accident is increasing
  - severity of minor injury claims is increasing (especially for pain & suffering)
  - proportion of costs due to minor injuries ranges from 30% to 60% of total BI claims
  - premiums don't cover claims costs

- (0.5 points) Any 2 of: [Hint: **FASES**]  
**F**air, **A**ffordable, **S**ustainable, **E**fficient, **S**imple



Answer: 11

Points: 3.75 points

Source: IBC.Flood

- (0.75 points) a. Hint: **adverse-under-maps**  
*adverse:* - adverse selection (if offered, only people who definitely need it would buy it, and it would be too expensive)  
*under:* - government under-investment in risk planning and mitigation  
*maps:* - lack of effective flood hazard maps
- (0.5 points) b. Any 2 of: [Hint: **BAIL** me out!]  
**B**uilding codes that are obsolete  
**A**sset management that is poor  
**I**nfrastructure is lacking (*levies, sewers,...*)  
**L**and use planning is inadequate
- (1 point) c. **I was a hard-ass here! I asked you for all 4!** (*Sometimes the CAS does that.*)  
*maps:* - need good flood maps for planning and risk management  
*infrastructure:* - need good infrastructure (*levies, sewers,...*)  
*awareness:* - need policyholders to be aware of risks and risk management  
*incentives:* - need incentives to encourage individual risk mitigation (*government could share burden of disaster relief with policyholders*)
- (1.5 points) d. Part (i) is not too hard: (*each unknown is worth 0.25 points*)
- |                                   |   |
|-----------------------------------|---|
| A                                 | C   |
| = $1/250 \times 1 \text{ year}$   | = $(60,000 \times 20,000 \times 0.4\%) / 1,000,000 + 125$ |
| = 0.4%                            | = 129.8   |
| B                                 | D   |
| = $1/250 \times 10 \text{ years}$ | = $(60,000 \times 20,000 \times 4\%) / 1,000,000 + 125$   |
| = 4%                              | = 173   |

Part (ii) requires you to notice that C2 is linear with respect to t. You then have to find the linear equations for C2 for each option. (*Grade 10 algebra*)

for option 1:  $C_2 = 24t$   
 for option 2:  $C_2 = 4.8t + 125$

Set these equations for C2 equal and solve for t to obtain **t = 6.51 years**

*This problem illustrates the contrast between short-term and long-term management. If the time horizon is just a few years, then **option 1** (the do-nothing, stick your head up butt option) is cheaper, but by year 7, **option 2** is already cheaper. And the lifespan of a floodway is probably a few decades, so the initial investment pays off very well. Granted, I just made these numbers up, but my overall point is valid!*

Answer: 12

Points: 2.25 points

Source: CIA.Accting

(0.75 points) a. STM bond of class HTM: *\* This is problem is just like 2016.Spring #26a*- use AV 2017 value of 2,900

TTC bond of class AFS:

- use MV 2017 value of 4000

GRT bond of class HFT:

- use MV 2017 value of 1150

(1 point)

b.	NI(HTM)	NI(AFS)	NI(HFT)
	= chg(AV) + coupons	= chg(AV) + coupons	= chg(MV) + coupons
	= (2900 - 3000) + 40	= (4200 - 4000) + 75	= (1150 - 1100) + 25
	= -60	= 275	= 75

Total NI = 290
----------------

OCI(HTM) = 0, *always*

OCI(AFS)  
= chg(MV - AV) *year-over-year*  
= (4000 - 4200) - (3900 - 4000)  
= -100

OCI(HFT) = 0, *always*

Total OCI = -100
------------------

*\* This is problem is just like 2016.Spring #26b . (Be sure to also review 2016.Fall #13 .)*

(0.5 point)

c. market rate up --> **asset value** down  
--> net income not affected  
other comprehensive income down  
equity down

market rate up --> **liability value** down  
--> net income up  
other comprehensive income not affected  
equity up

So the effect on assets is: (NI, OCI, Equity) = (no effect : down : down)

So the effect on liabilities is: (NI, OCI, Equity) = (up : no effect : up)

The "sum" of assets & liabilities is on (NI, OCI, Equity) is: <b>(up : down : indeterminate)</b>
--

Answer: 13

Points: 7.00 points

Source: OSFI.MCT

(2 points) a. capital available gross of deductions: 67,600 *(sum entries in first table)*  
 deduction for unregistered reinsurance: 10,000 *(see full solution in external PDF)*  
 deduction for excess B & C capital: 2,923 *(see full solution in external PDF)*  
 MCT net capital available **54,677**

(4.5 points) b. capital required for insurance risk: **36,457** *(sum the components)*  
 component: unpaid claims 15,670 *(see full solution in external PDF)*  
 component: premium liabilities 13,887 *(see full solution in external PDF)*  
 component: unregistered reinsurance 3,900 *(given)*  
 component: catastrophes 3,000 *(given)*

capital required for market risk: **9,000** *(sum the components)* [Hint: **Mr. IFER**]  
 component: interest rate risk 3,500 *(given)*  
 component: foreign exchange 500 *(given)*  
 component: equity 4,000 *(given)*  
 component: real estate 1,000 *(given)*

capital required for credit risk: **4,530** *(given)*

capital required for operational risk: **11,027** *(see full solution in external PDF)*

MCT minimum capital required: **37,206**  
 diversification credit: 5,205

(0.5 points) c. MCT ratio: = CapAvail / minCapReq  
 = 54,677 / 37,206  
 = **147%**

This is below the supervisory target of 150%. *(They would now be under increased scrutiny by OSFI.)*

Answer: 14

Points: 1.25 points

Source: CCIR.ARinstr

(1.25 points) a. investment income for 2017 investment income for 2018  
= 3.10% x avg(129000, 100600) = 2.80% x avg(100600, 91500)  
= 3.10% x 114,800 = 2.80% x 96,050  
= 3,559 = 2,689

excess (deficiency) ratio  
= (129,000 - 36,300 - 91,500 + 3,559 + 2,689) / 129,000  
= 5.77%

Since it is positive, it is an excess. (They sometimes take off points if you don't say this.)

Answer: 15

Points: 2.75 points

Source: MSA.Ratios

		for part (b)	
(0.75 points)	a. ROE= ( NI.preTax - TotTax ) / Eq	= 7.45%	> 5.4%
	ROR= ( U/W.Inc - CapGains + InvInc + IncFrmSubs ) / GWP	= 6.30%	> 6.2%
	ROA= ( NI.preTax - TotTax ) / (2-yr avg of assets)	= 2.48%	< 2.6%

- (1 point) b. ROE and ROR are within the acceptable range, but ROA is not. Monitor the level of the assets going forward. The MCT ratio is approaching the supervisory target level of 150%, so this should be monitored too.  
The financial health of the company is moderate.

- (1 point) c. corrected equity  
= (prior year equity) + (NI preTax) - (Total Tax)  
= 50,000 + 9,100 - 5,600  
= 53,500

revised ROE  
= (9,100 - 5,600) / 53,500  
= 6.54%  
> 5.4%

The revised ROE is lower but still within the acceptable range. It would not materially change my evaluation of the company.

Answer: 16

Points: 2.25 points

Source: CCIR.ARinstr

- (2.25 points) a. The key is knowing the layout of the exhibit and the formulas to complete the columns. It is exactly like **2016.Spring #18**. I found the answer in the examiner's report very confusing. It's much easier if you put everything into a table like in **Exhibit 80.10**. You can see the layout of this **net commissions exhibit** in the sample quarterly statement.

There is a summary box to this exhibit that isn't given in the statement of the problem. You have to memorize this. The only number you don't have is the commission expense.

summary of commissions		
gross		
<b>commission expense</b>	2,200	= (02) + (04) + (05) - (08) [use totals row]
contingent commission	600	<-- given
other non-deferrable commission	300	<-- given
<b>total gross</b>	<b>3,100</b>	= sum of gross commissions
ceded		
commission income	1,200	<-- given
contingent commission	150	<-- given
other non-deferrable commission	50	<-- given
<b>total ceded</b>	<b>1,400</b>	= sum of ceded commissions
<b>TOTAL NET COMMISSIONS</b>	<b>1,700</b>	= (total gross) - (total ceded)

final answer ---->

So, we have to get the total for **column (05)**. We need the corresponding value for LOB 2. This is easy. We just use the standard formula:

$$\text{Direct} + \text{Assumed} - \text{Ceded} = \text{Net}$$

Rearrange this as follows:

$$\begin{aligned} \text{Assumed} &= \text{Net} - \text{Direct} + \text{Ceded} \\ &= 1,200 - 1,500 + 400 \\ &= 100 \end{aligned}$$

Substitute this into the table below and calculate the **sum of column (05)**. *C'est très facile!*

LOB	(02)	(03)	(04) (05) (06) (07)				(08)	(09)	(10)
	DFcomm @ start	UEcomm @ start	commissions in respect of WP				DFcomm @ end	UEcomm @ start	Net Comm
			Direct	Assm'd	Ceded	Net			
1	1,400		1,000	100	400		1,600		
2	1,600		1,500	100	400	1,200	1,900		
Tot	3,000		2,500	200	800		3,500		

Now we calculate the **commission expense** using the green highlighted values:

$$\begin{aligned} \text{commission expense} &= (02) + (04) + (05) - (08) \\ &= 3,000 + 2,500 + 200 - 3,500 \\ &= 2,200 \end{aligned}$$

Answer: 17

Points: 2.25 points

Source: OSFI.Eqk

(1 point)

- a. ERX\_1 (Earthquake Risk Exposure) *without phase-in*  

$$= ( (\text{East Canada PML500})^{1.5} + (\text{West Canada PML500})^{1.5} )^{1/1.5}$$

$$= (40,000^{1.5} + 160,000^{1.5})^{1/1.5}$$

$$= 173,070$$
 ERX\_2 (Earthquake Risk Exposure) *with phase-in*  

$$= \text{ERX}_1 \times (\text{year} - 2014)/8 + \max( [\text{East Can PML420}], [\text{West Can PML420}] ) \times (2022 - \text{year})/8$$

$$= 173,070 \times (4/8) + 125,000 \times (4/8)$$

$$= 149,035$$

ERC (Earthquake Reserve Component)  

$$= \text{ERX}_2 - (\text{Financial Resources})$$

$$= 149,035 - 55,000$$

$$= 94,035 \quad \Leftarrow \text{final answer}$$

(0.5 points)

- b. Any 2 of:
- risk management**
- earthquake exposure risk management policies are subject to oversight by Board of Directors and implemented by Senior Management
- data management**
- data required is MORE than for traditional ratemaking
  - must address data Integrity, Verification, Limitations (IVL)
- models**
- understand (assumptions, methods, limitations) of earthquake models
- PML (Probable Maximum Loss)**
- PML = Total Expected Ultimate Cost
  - includes considerations for data quality, non-modeled exposure, model uncertainty, multi-region exposure
- financial resources & contingency plan**
- Financial Resources: quantification of how financial resources cover PML
  - Contingency Plan: how to continue efficient business operations after disaster

(0.75 point)

- c. Any 3 of: [Hint: DAQKD-UP]
- D**ocs: - document use of model within risk management program
- A**lternative: - explain why a particular model is used versus alternatives
- Q**ualified: - qualified staff needed to run in-house models regularly
- K**nowledge: - AML (require KNOWLEDGE of Assumptions, Methods, Limits of Model)
- D**ata: - must show that GRANULARITY & QUALITY of data is appropriate
- U**ncertainty: - understand how uncertainty affects: (capital adequacy, reinsurance)
- P**ML: - if  $\text{PML}_1 <> \text{PML}_2$ : explain (differences, subsequent model adjustments)

Answer: 18

Points: 3.00 points

Source: Reinsurance

(0.75 points) a. transfer or risk: - yes  
type of method: - qualitative  
method: - it is self-evident  
- although it appears underpriced, it is a standard auto policy

(0.75 points) b. transfer of risk: - yes  
type of method: - qualitative  
method: - apply the 'substantially all' rule  
- the insurer can't suffer a loss, but substantially all of the risk is being transferred  
- this may be a situation where the risk manager wants to withdraw immediately from the market

(0.75 points) c. transfer of risk: - no  
type of method: - quantitative  
method: - calculate the expected loss for the insurer  
- a loss of 5m doesn't hit the 10m threshold so insurer loss = 0  
- a loss of 15m passes the 10m threshold, leaving 5m for the insurer  
- but the deductible is 3m and the premium is 2m, so again the loss for the insurer is 0  
- since the insurer loss = 0 in all scenarios, there has been no transfer of risk

(0.75 points) d. transfer of risk: - no  
type of method: - quantitative  
method: - ERD (*Expected Reinsurer Deficit*)  
- frequency of loss = 6%  
- severity of loss as a % of premium =  $150/1000 = 15\%$   
- ERD = frequency x severity =  $6\% \times 15\% = 0.9\% < 1\%$   
- this test requires ERD > 1% for transfer of risk  
- therefore there is NO transfer of risk



Answer: 19

Points: 3.50 points

Source: CIA.DCAT

(1 point)

- a. Requirements for good financial condition:  
[1] MCT ratio  $\geq 150\%$  (for base scenario, for all years)  
[2] Capital  $\geq 0$  (for all years)

**Company A:** cannot conclude good financial condition

- condition [1] is satisfied
- condition [2] is not satisfied because capital for adverse scenario in 2019 is -5,000

**Company B:** good financial condition

- condition [1] is satisfied
- condition [2] is satisfied because capital  $\geq 0$  for base & adverse scenario for all years

(0.5 points)

- b. I would invest in Company A. Even though the appointed actuary cannot technically conclude that Company A is in good condition, its MCT ratio and capital are trending upwards. The negative capital for the adverse scenario in 2019 is the only weak area in a company with an otherwise positive outlook.

The MCT ratio and capital for Company B is trending downward. They were very close to being considered in unsatisfactory financial condition due to the capital for the adverse scenario in 2021 being 0.

*The moral of this story: This simple test of whether a company is in good financial condition is only a starting point. The concept is simplified so that it can be solved in an exam setting.*

(1 point)

- c. There are lots of valid answers. Here are the ones I chose:
- ripple effects:**
- post-event inflation (*shortage of labour and building materials for repair*)
  - loss of reinsurance (*reinsurers might raise rates or terminate coverage*)
- management actions:**
- raise rates to recover losses in a future experience period
  - review reinsurance requirements and options

(1 point)

- d. **plausible adverse scenario:**
- (set of assumptions) for an (undesirable but reasonably possible event) relating to (insurer's financial condition)
  - statistically, the scenario should lie between the 95th and 99th percentile on the loss distribution (*the CAS seems to require this as part of the definition*)
- reverse stress testing:**
- HOW FAR must risk factors change TO DRIVE the insurer's surplus negative during forecast period THEN determine whether such change is plausible

Answer: 20

Points: 3.50 points

Source: CIA.MfAD

(1.5 points)	a.	net unpaid at 6.75%	57,796	----->	57,796
		net unpaid at 7.5%	57,466	x 10% ---->	5,747
		ceded unpaid at 7.5%	1,884	x 12% ---->	226
					<b>APV = 63,769</b>

- (0.75 points) b.
- i [2.5%, 20%]
  - ii [0, 15%]
  - iii [25bps, 200bps] (*bps = basis points*)

- (1.25 points) c. E < D < B < C < A

- E: margin = 0 because all claims are settled and there is no risk  
(*number of claims is not relevant*)
- D: auto physical damage is short-tailed, company has good operations  
(*number of claims = 5000, and this will be important in the next 2 steps*)
- B: auto liability is longer-tailed, company has good operations  
(*number of claims = 5000, same as D, but different line of business*)
- C: key fact is number of claims = 2500, otherwise same as B  
(*fewer claims = greater risk of deviation*)
- A: catastrophe events have the greatest uncertainty

**Answer:** 21

**Points:** 1.75 points

**Source:** BCAR.Cdn

(0.75 points) a. Hint: **ICU** (*Remember Alice the Actuary and her epic snowboarding fail! OUCH!*)

**I**nvestment risk: **F**ixed income securities, **E**quities, **I**nterest rates [Hint: **FEI**]

**C**redit risk: counterparty default risk

**U/W** risk: excessive growth, loss reserves, mix shifts

(0.5 points) b. Any 1 of:

**interest rate risk component:**

- Canada considers market-value decline of an insurer's fixed-income portfolio due to rising interest rates

**U/W risk component:**

- makes adjustments for reported surplus (*Ex: eliminates intangible assets*)

(0.5 points) c. BCAR: - capital must support current & future premium risk

MCT: - focuses more on current year's risk

**Note:** DCAT usually projects for 3 years, so if you combine MCT with DCAT, you get a longer time horizon (*not part of answer, just a side note.*)

**Answer:** 22

**Points:** 2.00 points

**Source:** CIA.Disclosure, CIA.Runoff, CIA.Discnt

- (0.75 points) a. Any 3 of:
- diversification: - by line of business (*more lines is better*)
  - diversification: - geographically (*greater diversification is better*)
  - U/W limit: - lower is better
  - reinsurance: - more sources of reinsurance is better
- (0.5 points) b. - discount the paid & unpaid amounts at time  $t$  back to time  $t - 1$   
- subtract investment income earned during calendar year  $t$  on supporting assets and liabilities
- (0.75 points) c. Any 3 of: [Hint: **MARY-(IE)-CapG**]
- M**ethods for asset valuation and reporting investment income
  - A**llocation of assets and investment income by LOB
  - R**eturn on assets at balance sheet date
  - Y**ield on assets acquired after balance sheet date
  - I**nvestment **E**xpenses and losses from default
  - CapG**: capital gains/losses on assets sold after balance sheet date
- Notes:**
- a. *from wiki article CIA.Disclosure*
  - b. *from wiki article CIA.Runoff and 2016.Fall #26d*
  - c. *from wiki article CIA.Discnt and **BattleHack #1: Top Questions***

**Answer:** 23

**Points:** 3.00 points

**Source:** Feld.RtAgs

- (0.5 points) a. **shortcomings:**
- there is a conflict of interest because rating agencies are paid by the companies they rate
  - rating agencies have a history of unreliability (*they have given high ratings to companies that subsequently went bankrupt*)
- (0.5 points) b. **interactive rating:**
- an independent assessment of an insurer's ability to pay claims BASED ON a comprehensive qualitative & quantitative analysis
- (1.25 points) c. **the 5 steps:** [Hint: **RM-PDP**]
- R**esearch - by rating analysts (*insurer submits proprietary info*)
  - M**eeting - between rating analysts and insurer's senior management for presentations
  - P**roposal - the rating analyst leader proposes a rating (*insurer may submit further info*)
  - D**ecision - by ratings committee
  - P**ublication - to public & fee-paying subscribers
- (0.75 points) d. **reasons for participating in interactive rating:** [Hint: **USE**]
- U**nrated insurers: agents are wary of unrated insurers
  - S**olvency assessment: 3rd parties such as regulators or investors may rely on a rating agency assessment
  - E**fficiency: agents, U/W, regulators don't have the expertise to evaluate the financial strength of an insurer

**Answer:** 24

**Points:** 2.00 points

**Source:** OSFI.ORMA

(1.5 points)

a. Any 3 of:

**risk identification and assessment:**

- identify & assess the materiality of foreseeable & emerging risks

**relate risk to capital:**

- set internal capital using stress-testing techniques
- must withstand a specified loss without falling below supervisory capital requirements

**responsibilities of Board of Directors:**

- review reasonableness & appropriateness of risk profile & capital requirements in the context of board approved risk appetite & risk tolerance

**monitoring & reporting of risks:**

- annual reports to Board of Directors & Senior Management on risk profile & capital assessment

**internal controls & objective review**

- review for accuracy, integrity, reasonableness
- objective reviewer: internal or external auditor OR skilled professional not involved in the ORSA process

**NOTE:** *The answers given in the examiner's report for 2015.Fall #23 are very long. I think shorter answers could still receive full credit because each element is only worth 0.5 points.*

(0.5 points)

b. **Yes and no:**

- key elements are the same (*see part a*)
- but specifics differ by company depending on risk profile and NSC of operations. (NSC stands for Nature/Scale/Complexity)

Answer: 25

Points: 4.00 points

Source: CIA.Models

- (1.5 points) a. i **model:**  
- a practical representation of relationships among entities using FEMS concepts  
(Note: FEMS stands for Financial/Economic/Mathematical/Statistical)
- ii **model elements:**  
- all models require 3 elements: [Hint: **SIR**]  
- model **S**pecification  
- model **I**mplementation  
- model **R**un  
(Note: for 0.5 points, you don't have to explain Specification or Implementation)
- iii **model risk**  
- the risk that the user will draw inappropriate conclusions due to shortcomings of the model or its use

- (0.5 points) b. severity of failure, likelihood of failure

- (2 points) c. For severity of failure, consider: [Hint: **FIF**]  
**F**inancial significance: high (so risk is high)  
**I**mportance of Model: no info provided  
**F**requency of use: high (so risk is high)  
**Conclusion:** severity risk is HIGH

For likelihood of failure, consider

- complexity: - moderate (so risk is moderate)  
expertise of user: - high (so risk is low)  
docs: - excellent (so risk is low)  
testing: - thorough, since it's an established model (so risk is low)

**Conclusion:** likelihood of failure is LOW

**Overall conclusion:** risk of model failure is MODERATE

Answer: 26

Points: 2.25 points

Source: CIA.Mat

(0.5 points) a. An omission / under-statement / over-statement is **material**...  
...if the actuary expects it to **materially affect** the user's decision-making or reasonable expectations

(1 point) b. Scenario 1:  
**Company B** should have a more rigorous materiality level. It has a smaller surplus, so smaller swings in surplus would have a proportionately greater impact on Company B's decision-making.

Scenario 2:

**Company D** should have a more rigorous materiality level. It is a much newer company, with less historical data and less established management. Operations should be monitored more closely for any signs of trouble. Smaller swings in financial metrics would have a proportionately greater impact on Company D's decision-making.

**Note:**

This question was a "Bloom's Taxonomy" way of asking about the 6 company characteristics that should be considered in setting the materiality level.

Remember **(SAS)(TRF)**? Here we used the 2 S's: *Size, Stage in life cycle*.

If you don't remember, review the materiality wiki article **CIA.Mat**.

(0.75 points) c. I told you in the wiki article on materiality that if I were creating the exam, I would ask this question. *Did you listen to me??!!!* [Hint: **SIC**]

**S**ophistication of the user

**I**mportance of the concept of materiality to the user

**C**omplexity of the information (*KISS - Keep it Simple Stupid*)



Answer: 27

Points: 1.75 points

Source: CIA.Subseq

(0.25 points) a. **subsequent event:**  
- an event the AA becomes aware of after the calculation date but before the report date

(1.5 points) b. i - actuary became aware after the CalcDt but before the RptDt, therefore this is a subsequent event and we're on the middle branch  
- Error: no  
- **W**hen did event occur: after CalcDt  
- **D**ifferent (*did the event make the entity different?*) : yes, after CalcDt  
- **P**urpose: report on entity as it was  
--> **inform only** (*assuming the event is material*)

ii - actuary became aware after the CalcDt but before the RptDt, therefore this is a subsequent event and we're on the middle branch  
- Error: yes  
--> **reflect in report** (*assuming the event was material*)

iii - actuary became aware after the CalcDt but before the RptDt, therefore this is a subsequent event and we're on the middle branch  
- Error: no  
- **W**hen did event occur: before CalcDt  
--> **reflect in report** (*assuming the event was material*)

**Answer:** 28

**Points:** 2.75 points

**Source:** OSFI.AA

- (1 point) a. **OSFI's expectations:** See 2016.Spring #2a
- must be FCIA with 3 years of Canadian experience in past 6 years (*including 1 year of valuation*)
  - must have experience with CIA's SOPs (*also insurance legislation & regulation*)
  - must maintain professional development requirements
  - must have NO adverse findings with CIA disciplinary tribunal
- (1 point) b. **roles & duties: Any 4:** See 2016.Fall #34c
- perform **valuation** of policy liabilities at year-end using accepted actuarial practice
  - produce **AA** report
  - produce annual **financial position** report to Board of Directors
  - produce **financial condition** report when directed by OSFI, possibly using DCAT
  - produce **MAE report** (Material Adverse Event) for items requiring rectification
  - produce **policyholder report** on whether policyholders are treated fairly regarding dividends, bonuses, other benefits
  - **final opinion/memo** on financial statement items requiring significant calcs or judgment
- (0.75 point) Hint: **AAC** See 2016.Fall #27f
- A**ssist OSFI in assessing insurer safety & soundness
  - A**ssist AA by providing independent advice and a source for professional development
  - C**onfidence: increase confidence in the AA with management, public, regulators